Abstract

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Influencing of production of plant tissue culture of *Trifolium pratense* L. II

The aim of this thesis was to observe the effect of the abiotic elicitor vanadyl sulfate on the production of flavonoids in the suspension culture of *Trifolium pratense* L., variety DO-8 and variety Sprint. The effects on the production of isoflavonoids caused by the elicitor have been also studied.

The cultures were cultivated at the temperature of 25 ºC, 16 hour light/8 hour dark period, in the Gamborg´s nutriet medium with the addition of 2 $mg.l^{-1}$ of 2,4-dichlorophenoxyacetic acid and 2 $mg.l^{-1}$ of 6-benzylaminopurine.

Vanadyl sulfate was added in four concentrations and its influence was observed after 6, 24, 48 and 168 hours. The quantity of flavonoids was determined spectrophotometrically according to the Pharmacopoeia Bohemica 2009. The quantity of isoflavonoids was determined using HPLC.

The maximal content of flavonoids, 0,459 %, was measured in the suspension culture of *Trifolium pratense* L., variety DO-8, taken after 48 hours of action of elicitor vanadyl sulfate, which concentration was 1 $\mu mol.l^{-1}$. The statistically significant increase in production was 106 % compared to the control.

The production of flavonoids in variety Sprint was most influenced by the action of vanadyl sulfate, which concentration was 1 $\mu mol.l^{-1}$, taken after 6 hours, when the content of flavonoids was 0,246 %, the statistically significant increase in production was 82 % compared to the control.

The content of isoflavonoids was studied in the suspension culture of *Trifolium pratense* L. variety DO-8, when the production of isoflavonoids was most influenced by the action of 10 $\mu mol.l^{-1}$ vanadyl sulfate after 168 hours. The content of genistin increased by 200 %, daidzein by 200 % compared to the control.